REMARKS

Claims 1-26 are pending in this application.
Claim 20 is objected to.
Claims 1-19 and 21-26 are rejected.

The office action dated April 20, 2004 maintains the rejections of claims 1-3, 5-9, 14-18, 21 and 26 under 35 USC §102(b) as being anticipated by Kobayashi U.S. Patent No. 5,835,461. The office action also indicates that claims 4, 10-13, 19 and 22-24 are rejected under 35 USC §103 as being unpatentable over Kobayashi in view of others. These rejections are respectfully traversed.

"Read/write" optical discs include optical discs that allow data to be written only once and optical discs that allow data to be written many times. A DVD+RW disc is a type of read/write disc that allows data to be written many times.

When writing user data to a read/write disc, it is desirable not to create a frequency or phase discontinuity between the data being written ("new" data) and data previously written ("old" data).

Typical data recovery circuits include phase-locked loops (PLLs) for locking read clocks to user data. These circuits might not be able to tolerate frequency or phase discontinuities during readback of the old data and the new data, because the phase-locked loops cannot recover immediately from these discontinuities. It might take hundreds of clock cycles for the phase-locked loops to recover. User data would be lost while the phase-locked loops are recovering.

The prior art suggests the use of "edit gaps" to overcome the problems resulting from these discontinuities. Edit gaps are spaces that separate data blocks. These spaces give the phase-locked loops time to recover before readback of the new data. Kobayashi uses edit gaps, which he refers to as "linking areas," and ""postambles" and "postbuffers" between clusters of data (see column 12, lines 5-14).

The method of claim 1 overcomes the problems resulting from discontinuities without the use of edit gaps. Claim 1 recites a method of reading a block of data stored on an optical disc. The method comprises synthesizing header information for the data block; recovering actual header information from the disc; and recovering actual user data from the disc, the user data being phase-shifted by a phase difference between the synthesized and recovered header information.

By synthesizing header information, recovering actual header information, and using the phase difference between the two to phase shift the user data, recovery from phase discontinuities is immediate. Edit gaps are not needed.

This discussion about edit gaps was presented in the previous response. However, the office action appears a bit confused by it. The office action observes, correctly, that claim 1 doesn't recite the absence of edit gaps. However, the observation is irrelevant.

The discussion about edit gaps is intended to set up a problem statement. Edit gaps such as those used by Kobayashi have disadvantages. The method of claim 1 avoids the use of edit gaps.

The discussion about edit gaps is also intended to highlight the difference between Kobayashi and the present invention. Kobayashi, by using edit gaps, takes a different approach toward addressing phase discontinuities when reading user blocks of data. Kobayashi's edit gaps allow phase-locked loops to recover before the readback of new data. In contrast, the method of claim 1 phase-shifts the user data so recovery from phase discontinuities is immediate.

The office action appears to confuse user data with address data that is pre-recorded in an optical disc. There is a difference between user data and pre-recorded address data. The difference is explained by Kobayashi.

Kobayashi's figure 1 shows an optical disk 1 with a spiral pregroove 2. The spiral pregroove 2 has a wobble that it "meanders" from side to side in a predetermined cycle. Sync marks are formed in the pregroove 2 (see col. 5, lines 26-28 and 42-43). The wobble and sync marks are used to find addresses on the disk 1. The wobble and sync marks are formed (pre-recorded) in the disk 1 at the time of manufacture (see col. 8, lines 5-10)

At the time of manufacture, the disk 1 contains no user data. It is considered blank. A user can insert the disk 1 in the optical drive of a computer, and add data. According to Kobayashi's scheme, the user data is written to the disk 1 in clusters. Linking areas, and postambles and postbuffers (i.e., edit gaps) are used in between clusters of user data (col. 12, lines 5-14).

The office action bases the '102 and '103 rejections on Kobayashi's Figure 14 and its description thereof. Figure 14 shows a circuit 33 for recording and

reproducing user data. Figure 14 also shows circuits 36, 37, 40 and 41 for reading pre-recorded address information in the disk 1.

In making the rejections, the office action does not refer to the recording/reproducing circuit 33, which recovers and records user data. Instead, it refers to the circuits for reading the pre-recorded address information.

The office action appears to argue that either (1) there is no difference between user data and pre-recorded address data; or (2) user data can be read by using the address-reading circuits 36, 37, 40 and 41. The description of Kobayashi's Figures 1 and 18 refutes the argument that user data and address data are the same. The fact that Kobayashi uses a dedicated circuit 33 for reading and reproducing user data refutes the argument that the address-reading circuits 36, 37, 40 and 41 can be used to read user data.

The office action offers technical analysis that is not supported by the prior art. The office action contends Kobayashi discloses that a phase offset between detected sync marks and pseudo sync marks are used to shift user data. Kobayashi discloses no such thing.

Referring to Figure 14 of Kobayashi, a mark detection circuit 36 and a mark cycle detection circuit 40 are used to detect sync marks formed in the wobbled pregroove 2 of the optical disc 1 (col. 65, lines 41-64). If the detected pulses have a constant period, the mark detection cycle detection circuit 40 generates pulses in synchronization with the detected pulses and sends those generated pulses to a phase-locked loop (PLL) 41 (col. 8, lines 55-60). If the detected pulses do not have a constant period, the mark detection circuit 40 generates pseudo-pulses

(col. 8, lines 60-64). If the detected pulses are not supplied with a constant period, it is assumed that the detected pulses are not caused by the sync marks. The pseudo pulses prevent the PLL 41 from being locked in an incorrect phase (col. 8, lines 60-64).

The pulses from the mark cycle detection circuit 40 are supplied to the PLL 41. The PLL 41 includes a phase comparator 42 that detects the phase difference between the signal generated by a VCO 44 (via divider 45) and the signal generated by the mark cycle detection circuit 40.

A sector counter 46 uses the VCO output to generate a sector start pulse (see col. 9, lines 17-20). Control circuit 38 uses this pulse to drive a thread motor 39, which positions an optical head 32 to a predetermined track position on the disc 1 (see col. 9, lines 21-25).

Yet the office action contends that a phase shift between the mark-synchronized pulses and the pseudo pulses is somehow used to shift user data. It cites Kobayashi's somewhat vague statement at col. 8, lines 60-64; and in the section "Response to Arguments" the office action explains the

> phase difference detected by the comparator [42] is used to shift user data because the phase difference is used to adjust or shift the phase of the clock used to reproduce user data from an optical disc. The shift in the reproduction clock causes user data, which is read with the reproduction clock, to be shifted... In addition, the phase difference detected by the comparator is between *sic* [synchronized marks and pseudo marks].... When the detected signals no longer have the constant period, the mark cycle detection circuit generates pseudo pulses to replace the pulses synchronized and in phase with the detected sync marks.... Thus, when the detected sync marks ... no longer in constant period, the phase of the first pseudo pulse is

> compared with the phase of the divided PLL output, which is synchronized to the phase of the detected [sync marks]. The resulting phase difference ... shifts user data that is recovered from the disc by adjusting the phase of the reproduction clock.

This explanation embodies the examiner's understanding of how Kobayashi's system works. However, it is pure speculation. Kobayashi does not provide this explanation.

Moreover, the examiner's explanation concerns how Kobayashi reads the pre-recorded address information on the disk 1. It isn't until the last sentence that a connection is made with user data. In the last sentence, the examiner assumes that a clock provided by the VCO 44 is used to shift user data. Kobayashi does not show a figure or describe a circuit supporting this assumption. Kobayashi shows no circuitry and offers no description as to how user data is shifted.

The examiner offers no evidence in the prior art to support his explanation. He only offers his own unsubstantiated opinions.

The examiner has no reason to assume a phase shift occurs between the synchronized marks and the pseudo marks. Kobayashi isn't entirely clear about how the pseudo pulses are used, but one can speculate that the either the pseudo pulses are sent to the PLL 41 or the mark-synchronized pulses are sent to the PLL 41. One can also speculate that the pseudo marks are sent to the PLL 41 in order to maintain a constant phase in the output of the mark cycle detection circuit 40. Such speculation would be consistent with Kobayashi's stating that the pseudo pulses prevent the PLL 41 from being locked in an incorrect phase (col. 8, lines 60-64).

Not only is the examiner's technical analysis unsubstantiated, but his legal analysis is flawed. In the section "Response to Arguments" the examiner offers a claim construction. The examiner states that (1) "sync marks are interpreted as header information," presumably of the wobble data; (2) "pseudo pulses are interpreted as synthesized sync marks and, as a result, synthesized header information."

However, it is not the job of an examiner to interpret the prior art, but rather to interpret the claims. Thus, the examiner is not supposed to interpret and generalize sync marks. Rather, the examiner is supposed to determine whether header information recited in claim 1 could reasonably cover sync marks for wobble data, and whether synthesized header information in claim 1 could reasonably cover pseudo marks. He has made no such determination.

Moreover, the examiner's claim construction makes no sense in view of the some of the dependent claims. Some of the dependent claims recite content of the header information. Kobayashi's sync marks do not contain content such as sector address and error detection code.

The office action also repeats the rejection that it made in the office action dated April 20, 2004. A response to that rejection was filed on July 20, 2004. For completeness, the response filed July 20, 2004 is incorporated by reference.

In conclusion, the office action makes '102 and'103 rejections that are based on speculation, flawed technical analysis, and incorrect legal analysis The office action offers no evidence in the prior art of a method of reading a block of data stored on an optical disc by synthesizing header information for the data

block; recovering actual header information from the disc; and recovering actual user data from the disc; and phase-shifting the user data by a phase difference between the synthesized and recovered header information. Because the office action provides no evidence that the prior art teaches or suggests the method of claim 1, claim 1 and its dependent claims 2-14 should be allowed over the documents made of record.

Claim 15 recites an apparatus including means for recovering actual user data from a disc, the user data being phase-shifted by a phase difference between the synthesized and actual header information. For the reasons above, claim 15 should be allowed over Kobayashi.

Claim 16 recites an apparatus including a circuit for determining a phase difference between recovered actual and synthesized header information; a circuit for determining a phase difference; and a circuit for phase-shifting recovered user data by the determined phase difference. For the reasons above, claim 16 and its dependent claims 17-25 should be allowed over Kobayashi.

Claim 26 recites an apparatus including a circuit for determining a phase difference between recovered and synthesized header information; and a circuit for phase-shifting recovered user data by the determined phase difference. For the reasons above, claim 26 should be allowed over Kobayashi.

The examiner is respectfully requested to withdraw the rejections of the claims. If any issues remain, the examiner is invited to contact the undersigned to discuss those remaining issues.